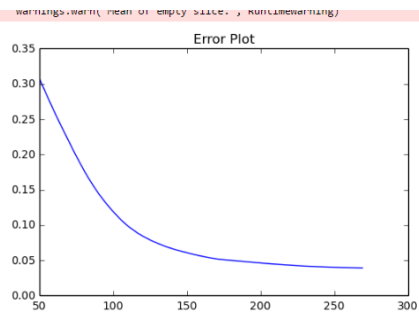


EE 6973: MACHINE LEARNING WITH BIG DATA ANALYTICS
ASSIGNMENT 4

By
MITHA ANN PHILIP
Jrb468

Given:
Number of Epoch: 27000
Learning Rate: 0.0008
Final accuracy on test set: 0.942857
Error: 0.038824737072

Error Plot:



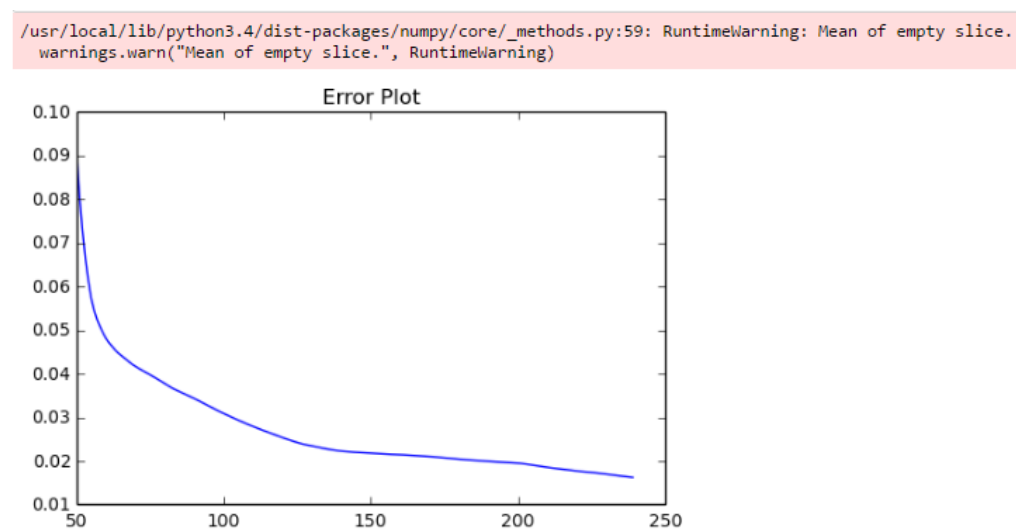
Solution a)

Best Accuracy: 0.971429

Optimal Number of Epochs and Learning Rate: 24000 and 0.009

Error: 0.0146904587746

Error Plot:



Solution b)

Number of Hidden Layers: 2 Hidden Layers, 6 nodes

Activation Function: Sigmoid

Classifier: Softmax Classifier

Number of Iterations: 20,000

Cost Function: Cross Entropy Error

Optimizer: Gradient Descent

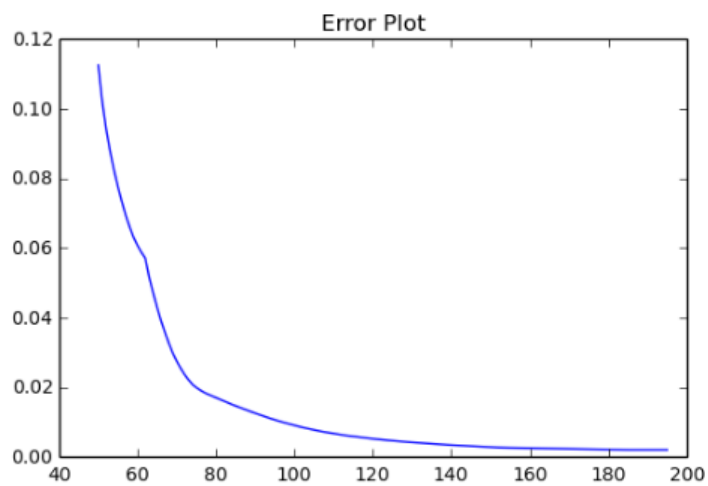
Learning Rate: 0.5

Final accuracy on test set: 0.990476

Error: 0.0020986199379

Error Plot:

```
/usr/local/lib/python3.4/dist-packages/numpy/core/_methods.py:59: RuntimeWarning: Mean of empty slice.  
warnings.warn("Mean of empty slice.", RuntimeWarning)
```



The error is found to be much lesser in (b). Accuracy is better in case (b) and is achieved with lesser number of epochs when compared with (a).